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Review Article

# Ayurvedic Concept of Cooking Oils in Management of Lifestyle Disorders W.R.T. Taila Varga

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## ABSTRACT

Non-communicable diseases which kill around 40 million people each year that is around 70% of all the deaths globally. Reason for this is healthy diet and traditional preparations are replaced by high calorie diet along with lack of physical activity. Commonly using cooking oils are Sarshapataila (Mustard oil), Tilataila (Sesame oil), Narikelataila(Coconut oil), BhuchanakaTaila (Ground nut oil), Surya vallitaila (Sunflower oil) etc. Again depends upon composition, processing, origin, dietary supply, living place quality and nutrient composition of cooking oils will change. While choosing taila based on prakruthi of an individual should consider the satmya of the individual to that otherwise leads to satmyavirudha. Proper samyoga and samskara done to the tailas helpful for improve therapeutic efficiency. Matrapamana is an important factor for administration of both ahara and aushadha and it again depends upon the digestive fire. Management of prameha, sthoulya, medroga, hrudroga, raktachapa are can be manage by proper administration of cooking oils. Foremost thing in management of lifestyle disorders are replace saturated and trans fats with unsaturated fatty acids rich in omega-3. Reuse of oil can create free radicals leads to atherosclerosis it increases level of cholesterol and blocking arteries. In cold climate places oils which having low smoking point can be use and for hot climate oils with high smoking point can be use. So habit and place which the person lives also matters for deciding quality of oil.

**Key words:** Lifestyle diseases-Cooking oils-Prameha-Sthoulya- Hrudroga

## INTRODUCTION

Life style diseases are ailments that are primarily based on the day today habits of people. Habits that detract people from activity are push them towards a sedentary routine can cause non-communicable diseases. Which kill around 40 million people each year that are around 70% of all the deaths globally. Cardiovascular diseases that include heart attacks and stroke in an account of 17.7 million deaths per year, cancer kills around 8.8 million per year diabetes that has annual morbidity rate around 1.6 million. <sup>[1]</sup>

Diseases namely cardio vascular diseases, stroke, diabetes, certain kind of cancer, obesity, dyslipidemia are heavily linked with life style choices. Lipid abnormalities especially low levels of HDL observed also 50% of participants have subnormal HDL levels. It is noticed high cholesterol and triglyceride levels 21.9 and 14.1 percent respectively. <sup>[2]</sup>

As compared to olden days physical activity has reduced more machineries are replaced instead of manpower. More than that healthy diet and traditional preparations are replaced by high fat and high calorie diet

supplements. Commonly using cooking oils are Sarshapataila (Mustard oil), Tilataila (Sesame oil), Narikelataila (Coconut oil), BhuchanakaTaila (Ground nut oil), Surya vallitaila(Sunflower oil). Improper quality, quantity and processing done to these oils leads to major health issues. Also adulteration done to the cooking oils hampers health. Using more saturated fat in diet and lack of essential fatty acids leads to life hampering diseases.

Ayurveda acharyas has mentioned properties of each oil and its therapeutic indication. Tailas that recommended for using internally either should undergo samskara or samyoga for better result. [3] So it is important to understand the scientific ways of using cooking oils and choosing them based on our body condition and constitution along with the respective dietary recommendation for prevent many dietary and life activities influenced diseases.

## **MATERIAL AND METHODS**

References were collected from Ayurveda classics texts, preventive and social medicine, various journals & articles. These references are analyzed logically and conclusion is drawn.

## **DISCUSSION**

### **TAILA**

The substance named as taila which has properties like guru (heavy to digest), Sita (cold in potency), Sara (flows), Snigdha (unctuous), Mantha(slow in activity), Sukshma(can penetrate to minute channels),Mrudu(soft in touch), Drava (which flows) and opposite to dry substance is sneha. [4] Taila is considering as one of the chathursneha. [5] Qualities of taila can be improved by using samsakara(processing) or samyoga (combination) this processing is relevant while cooking.

### **Types Of Fat** [6]

**Saturated Fat:** Mainly animal origin and solid in room temperature. It increase both HDL and LDL levels and increase cholesterol which is harmful for heart.

**Mono Unsaturatedfat:** Mainly plant origin and liquid in room temperature. Decrease blood cholesterol levels so that decrease risk of heart disease and type-2 diabetes

**Poly Unsaturated Fatty Acids:** Mainly plant origin and liquid in room temperature. Decrease cholesterol so it is good for heart & prevent type 2 diabetes.

**Trans Fat:** Made from hydrogenation oils, It increase LDL, cholesterol and triglyceride, lower HDL so that it increasing risk of heart disease. India limited use of edible oils and fat to 5% in its food regulation act.

## **MAJOR COOKING OILS AND PROPERTIES**

### **GENERAL FACTORS ABOUT OILS /TAILA INFLUENCING MANAGEMENT OF LIFESTYLE DISEASES**

#### **COMPOSITION:**

Composition which defines the nutritive quality of the oil. The foremost thing is replace saturated and trans fats with unsaturated fatty acids rich in omega-3. Vegetable oils mainly choosing for cooking are rich in unsaturated fatty acids except coconut oil. Poly unsaturated fats –long chain, alpha linolenic acid, omega-3 fatty acid can prevent ventricular arrhythmia. [7] Trans fats have uniquely adverse effect on blood lipids. Higher intake of trans fat and lower intakes of poly unsaturated fat increase risk of type-2 diabetes. [8] FDA approved last year qualified claim for oils containing 70% oleic acid reduce coronary heart disease. [9]

Soyabeanoil, canola, walnut and flaxseed oil contains alpha linolenic acid which is main source of essential omega-3 fatty acids helpful for reduce sugar level in type -2 diabetes. Olive oil contains antioxidant called tyrosol that act as therapeutic agent for improving insulin resistance in diabetes. Rice bran oil rich in antioxidants, mono and poly unsaturated fatty acids can reduce 30percent blood sugar levels. Sesame oil rich in vitamin E and antioxidant such as lignanans along with rice bran oil it can reduce cholesterol and

blood sugar levels. <sup>[10]</sup> Oil which has omega 6 and omega 3 in 2:1 ratio needed for heart health. Coconut oil high in saturated fat called lauric acid which is antioxidant but lack of omega 3 and contains only less amount of omega 6.

Taila with Katutiktha rasa Ushnavirya, Katuvipaka, laghuguna can be chosen for kaphaprakruthi. Because these persons are adapted to Madura rasa and normally not that much physically or verbally active. <sup>[11]</sup> So there is more chances of accumulation of Kapha and Medas in their body and may leads to prameha, sthoulya etc.

Tailas which possess Madhurarasa, madhuravipakam, seethaviryam and guru guna can be chosen for pitta prakruthi persons. Pitta prakruthi persons are usually hyper active and adapted to katu andamla rasa. <sup>[12]</sup> So adopting tailas have these properties helpful for preventing lifestyle diseases like amla pitta, Kushta, rakthachapa etc. Taila which possess madhurarasa, ushnavirya, katuvipaka and guru can be chosen for vataprakruthi persons. Basically they are physically very active and prone to diseases related to asthi and majja. <sup>[13]</sup> So oils which possess these properties helpful for balancing the prakruthaavastha of doshas and dhatus.

Katu rasa can be correlated to pepsin have ability to remove srotorodha, mahura rasa which has high glucose content which promote brain functions and make calmness of mind. Tiktha rasa considered as most light so it can penetrate the tissues. Ushnaveerya has ability to increase metabolism and laghutha of taila helps to decrease excess medas and kapha which has guru gunawhich reduce vata will nourishes bones and lubricates joints.

#### **PROCESSING:**

Oils are not meant for cooking high temperature over heating leads to carcinogens formation also removes nutritional qualities of oil. Oils that are healthy at room temperature turn rancid when heated beyond certain temperatures. The temperature at which oil start to

disintegrate known as smoke point. <sup>[14]</sup> Oil having higher smoking point can be used for deep frying, with low smoking point used for baking and stir frying. Olive oils are unsuitable for cooking because of unsaturated fatty acid but extra virgin and virgin olive oil extracted can do mild processing. Palm oil contain high saturated fat can withstand deep frying at high temperature and is resist to oxidation compared to high poly-unsaturated vegetable oils. <sup>[15]</sup> Reuse of oil can create free radicals leads to atherosclerosis by increasing level of cholesterol and blocking arteries. <sup>[16]</sup> Due to accumulation of toxic substances like HNE which can cause stroke, Alzhimers, liver disease etc. LA/ALA ratio, low SFA and high MUFA content and along with relative stability during cooking preferred mustard oil for cooking. <sup>[17]</sup>

Ayurveda acharyas quoted that tailas are capable of fight against diseases after doing "Samyoga or Samsakra" to that. Taila which is do murchana for removing amatha and Phenodgama 'is the pakalakshana of taila it suggests indirectly heating more than a particular temperature may cause changes in to the qualities of taila. <sup>[18]</sup> Also while doing samsakara of some substances caution it should not incompatible to the body. Classically told that bharjana of mayuramamsa in sarshapataila is incompatible to body. <sup>[19]</sup> At present processing of cooking oils with artificial flavors, colouring agent, high calorie food substances these affect both physical and mental health.

#### **ORIGIN:**

Animal origin oils are contained more saturated fatty acids and vegetable origin contain more unsaturated fatty acids except coconut oil. <sup>[20]</sup> Plant oils can provide renewable sources of high value fatty acids and contain 5 basic fatty acid structures. Palmitic acid and linolenic acid and oleic acid are more found in plant oils which are 2 essential fatty acids in human diet. <sup>[21]</sup> The main sources of polyunsaturated fats in

animal sources are eicosapentaenoic acid and docosahexaenoic acid. [22] Oxidative deterioration is low in plant oils and high in animal Fat. [23] Animal originated fats are stored in adipocytes and in plants stored in fat granules.

Based on origin Audhbhitha, jangama and bhauma are 3 types of dravyas there in Ayurveda. [24] Audhbhitha are drawn from plants, jangama drawn from animals and bhauma is of mineal origin. Classically explained qualities of them separately. Taila is originated from sthavara and vasa, majja and gritha are originated from jangala. Among this gritha is chosen as best rasayana even though it contain high amount of unsaturated fatty acids if administer in alapamatra (small quantity). [25] Proper administration of them maintains dhathusatmyatha. Taila which is recommended for krusha and sthula because it can acts both the ways. [26]

#### **DIETARY SUPPLY:**

RDA of each substance is important for healthy diet. Consumption of oil also should be based on RDA. It again depends on the body condition, BMI, Age, Mode of lifestyle etc. Among vegetable oils used for cooking RDA recommended in measurement of table spoon except coconut oil and palm oil. Because of high composition of saturated fats both recommended in teaspoon. For protect health and satisfy energy need of body fat is an essential constituent. Daily recommended intake of cooking oils of an adult is about 20grams ie, 4 teaspoon. In obesity condition 3 tsp has recommended and in case of heart patient 2 tsp/day. [27]

Matrapramana is important for administration of both ahara and aushadha and it again depends upon the digestive fire. [28] Taila having vyavayi and sukshmaguna so it can penetrate the channels easily. But it is possessing snigdha and dravaguna which is opposite to the qualities of Agni. So in mandagni state should take oils in alapamatra and in bhasmakagni state only can administer in atimatra. But in samagni state

also while administer taila should be in alapamatra.

#### **LIFE STYLE:**

Life style and food intake are the two factors which controlling health of human being. The amount of calorie intake should be proportional with expenditure of energy. A man leading a sedentary lifestyle with high calorie diet more prone to life style diseases. So man leading a sedentary life should include more unsaturated fatty acids and less saturated fatty acids. Those who have a physically active life style can include saturated fat but based on recommended RDA for the body.

While explaining nidana of prameha and sthoulyait is cauted that asyasuksham (excess food intake) sayyasukham (excessive sleep), all diets which are bruhmana, guru, madhurapradhana etc. [29] So it states that those who follows a sedentary life style with high fat diet may leads to life style induced diseases like prameha, sthoulya etc.

#### **LIVING PLACE:**

In cold climate places oils which having low smoking point can be use and for hot climate oils with high smoking point can be use. [30] Also those who living in high range places chances of increasing blood pressure so there can be choose oils which having high MUFA and oleic acid content.

Desa in Ayurveda included in dwadasapareeksha because of its significance in chikitsa. [31] Individuals from jangaladesa having vataprakopa and so that taila which having opposite quality of vatadosha should be used for cooking example tilataila. In Anupadesa which is predominant in kaphadosa there taila which possess gunas which are opposite to kaphadosha should be chosen example sarshapa taila. [32]

#### **HABIT:**

If a person habituated in using one oil and suddenly adopting new oil may disturb G.I tract and metabolism. There should be an acclimatization period for adopting new oil to the diet. Start from very minimal quantity then regularly choose for cooking.

Satmya is an important factor consider in human diet. [33] It is mentioned in classics those who habituated to take any food even though that is incompatible to their body constitution it will not hamper health. So even though taila which are choosing based on prakruthi should consider the satmya of the individual otherwise leads to satmya virudha. [34]

#### **PREVENTIVE AND CURATIVE USE OF TAILA IN DIET FOR MANAGEMENT OF PRAMEHA**

The recommended oils for diabetes are Nikumba (danti: Baliospermum montanum Muell), Ingudi (Balanites aegyptiaca), Sarshapa (Mustard) and Atasi (Linum usitatissimum). [35] These oils are pungent in nature and low quantities of these oils are sufficient in cooking to give desired taste and flavor. Among them Nikumba, Ingudi and Atasi oils are not commercially used and moreover these are not available elsewhere.

Atasi oil is Vatasamaka, vitiate kapha, considered hot in potency and mainly indicated in vataja type of prameha including madhumeha. Atasi oils are well known for its rich source of the essential fatty acid alpha-linolenic acid which is a biologic precursor or omega -3 fatty acids such as eicosapentaenoic acid. [36] Sarshapataila which is kaphahara and pitta vardhaka. Prameha is mainly kaphadosha and kleda dominant disease. So taila which having kaphahara and if it is capable of increase agni preferably can be used.

A high PUFA n-6 content and high n-6/n-3 ratio in dietary fats are considered more atherogenic and diabetogenic. The newer "Heart friendly oil" such as sunflower and safflower oil possess desirable PUFA content and the excess use of these oils make health issues. [37] Proper use of our traditional cooking oils such as ghee, coconut oil, sesame oil, and mustard oil would actually reduce risk of dyslipidemia, AHD, and type -2 DM.

Mustard oil does not damage beta cells of pancreas glands but enhance the activity of beta cells to secrete more insulin

for covert glucose into energy. Elaidic acid and vitamin E are the protective measure for insulin both are rich in mustard oil helpful for reduce diabetic hazards. [38] There was a significant reduction of blood glucose level same time improvement of lipid profile by palm oil, ground nut oil and coconut oil. [39]

#### **STHOULYA AND MEDOROGA**

Sthoulya and Medoroga can be used synonymously but the associations are not a compulsion. Excessive accumulation of Medodathu on normal sites is taken as Sthoulyabut improper circulation of Medas in body can be taken as Medoroga. Obesity caused by either increased number or size of lipid molecule but dyslipidemia is the derangement of lipid protein levels. [40,41] So all obese person need not to suffer from dyslipidemia and vice versa.

Fat in diet has a predominant role in maintenance of lipid protein levels. Excessive use of saturated fat, Tran's fat and less intake of unsaturated and lack of omega -3 fatty acid, essential fatty acids leads to obesity or dyslipidemia. Coconut oil is widely used as cooking oil which is rich in saturated fats in comparison with sunflower oil. But same time coconut oil capable of increase HDL. In study of Maniyal et al. support use of coconut oil based in RDA ie; administration of coconut oil and sunflower administered for 2 years and compare showed that there is no change in lipid related cardiac risk factors even in those receiving standard medical care. [42]

Taila which has similar gunas as that of medodathu. Taila which possess katu or tiktha rasa, katuvipaka, laghu are preferably suited for medoroga. Moorchithatilatailapana given before administer before apatarpana medicines reduced weight. [43] So using for cooking in administer mild amount regularly for maintain body weight.

Narikelataila and suryavalli taila are not recommended in hyperlipidemic condition and obesity. Narikelataila possess abhishyanthaguna so can be recommended based on RDA. Soyabean oil played a role in reduction of total cholesterol levels than

sesame oil. Sesameoil, mustardoil, soyabeanoil, palm oil, ground nut oil are increasing HDL count. Among that mustard oil having higher impact on HDL count. Soya bean oil reduces LDL count as compared to sesame oil. Palm oil found to have capacity in reduction of very low density lipoprotein levels. Mustard oil also helpful in reduction of VLDL. 100 gram mustard oil contains 1.08 mg dietary fibers which helps to stimulate the digestive functions in our body. And 5% of vitamin C which serves as a coenzyme for metabolic functions. It contains about 12 gram saturated fat, 9.96 mg selenium for liver and muscular health. [44]

### HRUDROGA AND RAKTHACHAPA

Hrudaya is the chetanasthanamand is the seat of para Ojus. [45] Among doshasPranavayu, Sadhaka pitta and avalmbakakapha and ojus are located in hrudaya. The imbalance of three leads to structural and functional failure of the heart. Drugs which mentioned as hrudhya should manage equilibrium of these three doshas. Sheethavirya gives stability and strength to heart. Ushanavirya drugs give dynamic energy and strength to contraction and relaxation of cardiac muscles.

Rakthachapais a condition can be correlated to hypertention . When include high salt content in diet, high calorie diet leads to hypertention. Lipid molecules circulation slow down and get lodge in blood vessels cause atherosclerosis and also cause hypertention. Taila which is laghu, ushna or seethavirya, katuvipaka, lekhana, vyavayi or vikasi suitable for hrudaya. Because dasadhamanies (channels of circulation) are originated from heart and considered as rasavahasrotomoolam. Sarshapataila which is ushnavirya, katurasa and vipaka and lekhana. Due to these it can easily absorb and circulated through dhamanies. Tila taila is vyavayi and sukshma in nature so it can easily penetrate through tissues. [46]

Heart disease is still one of the major causes of mortality in present era. The

national cholesterol education programme has recommended that a reduction in LDL – cholesterol should be treatment choice for heart disease. [47] Apart from this fatty acid content oils also provides various micronutrients that is beneficial for cardiovascular system. The hydroxyl tryrosol and oleuropein are the most effective antioxidants in olive oil have better antioxidant activity helpful for inhibit cholesterol synthesis . Olive oil contains polyphenols, squalene and high MUFA content is beneficial for balance serum lipid level thus decrease risk of CVD. [48]

Sunflower oil which rich in PUFA ie, linolinicacid, it can reduce total cholesterol and LDL-cholesterol. Also it can reduce triglycerides and capable of protect against ishchemia reperfusion injury. The high amount of alpha linolinic acid present in mustard oil helps to control high cholesterol level and heart disease. Studies showed 70 % of chances of heart disease dropped by consumption of mustard oil. It healthier than olive oil because it does not has trans-fat, low saturated fat. Studies shows that Sesame oil can decrease high level of cholesterol and inflammation and lower the risk of atherosclerosis. [49]

### CONCLUSION

Oils are important part of diet either, increase or decrease in its amount leads to many systemic disorders. Alopecia, thrombocytopenia, intellectual disability, Vitamin deficiency disorders caused by Vitamin A,D,E and K are caused by lack of essential fatty acids. Also Fatty liver, obesity, dyslipidemia, CVD, Hypertension all caused by excessive amount of fat in body.

The proper amount of oil consumption, proper metabolism are essential for maintain health. Community is accustomed to intake of excess or more than daily recommended dietary intake of oil. Food preparations of South India need more oils for seasoning, making sweets, curries, snacks than western diet. Also lack of intake of raw or half boiled vegetables along with

oily diet compared to other countries. This affects the metabolism of oils in body. Based on the climate of the living place, based on lifestyle, habitual consumption, processing of oil, composition, depending on these factors should choose oil for cooking.

Taila which should choose based on the guna and karma. It acts upon the body based on the quality and it again depends on the origin of oil. Samskara and Samyoga done to the oil are important while it use for cooking. That defines food which is healthy or harmful for body.

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